

REMARKS

Claims 1, 2, 9, 10, 17, and 18 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Mama (JP 11-34610) in view of Kojima et al. (JP 58167203). Applicant traverses this rejection for the reasons below.

Regarding claims 1, 2, and 17, applicant traverses the rejection because the cited prior art references, taken alone or in combination, fail to disclose or suggest a ratio h/SH of a tire radial-direction length h between edges of the extension portions and edges of the belt ply, and a tire section height SH , where $h/SH \leq 1.5/100$, as recited in claim 1.

Mama shows, in Figs. 1-3, a tire including one or more cover layers 6, where a portion of each of the cover layers is relatively close to belt layer 5a. However, terminal edges of the cover layers 6 have a relatively large vertical separation relative to terminal edges of the underlying belt layer 5a. Moreover, Mama is silent regarding a tire section height. Accordingly, it follows that Mama is necessarily silent regarding any relationship between the vertical separation between terminal edges of the cover layer 6 and terminal edges of the belt layer 5a and the section height of the tire.

Kojima is cited to disclose a coating rubber having a loss factor that is greater than zero and less than 0.10. However, Kojima does not disclose a belt cover ply. Accordingly, it follows that because Kojima fails to disclose a belt cover ply, Kojima necessarily also fails to disclose a ratio involving the distance between extension portions of a belt cover ply and a belt ply as compared with a section height.

In contrast, the present application teaches that a ratio h/SH of a tire radial-direction length h , measured between edges of an extension portion of a belt cover ply and edges of a belt ply, and a length SH measured as the tire section height should be less than or equal to 1.5/100. That is, as shown in, for example, Figs. 1, 2, and 4, the vertical separation between the edge A of the belt cover ply 8 and the edge B of the first belt ply 5A is small when compared to the tire section height. Maintaining this ratio advantageously moderates heat generated in a shoulder portion of the tire by the repeated deformation received when the tire is rolling.

Moreover, while the examiner asserts that the claimed ratio does not conclusively show unexpected results, applicant asserts that, as shown in Table 1 of the present specification, maintaining the claimed ratio advantageously increases the uniformity and reduces the rolling resistance of Present Invention Tire 1, compared with Comparison Tire 1. Because Mama and Kojima, taken alone or in combination, fail to disclose or suggest the ratio h/SH , applicant respectfully requests withdrawal of the rejection of claims 1, 2, and 17.

Further, with regard to claim 17, the examiner has stated that the tires shown in Figs. 1-3 of Mama would likely satisfy the claimed ratio, since heavy-load tires and agricultural tires have larger section heights. However, claim 17 of the present application recites that the tire is a passenger-car tire, and not a heavy-load or agricultural tire. For this additional reason, applicant again asserts that the rejection of claim 17 should be withdrawn.

Regarding claims 9, 10, and 18, applicant traverses the rejection because the cited prior art references fail to disclose or suggest a belt cover ply that includes a main belt cover section and separate belt cover extension sections, as recited in claim 9.

The present invention discloses a belt cover ply that includes a main belt cover section and separate belt cover extension sections. As shown in, for example, Figs. 5 and 6 of the present application, the belt cover ply 8' is disposed radially outward of belt plies 5A and 5B, and is divided into main belt cover section 8'X and belt cover extension sections 8'Y. As is clearly shown in Figs. 5 and 6, the main cover section 8'X and the belt cover extension sections 8'Y are separate pieces.

In contrast, Mama discloses only that belt cover layers 6 cover edges of a plurality of belt layers 5. As shown in Figs. 1 and 2 of Mama, belt cover layers 6 are disposed only at inside and outside shoulders of the tire. The belt cover layers cover the edges of the underlying belt plies, and extend beyond the edges of the belt plies. However, the belt cover layers shown in Figs. 1 and 2 of Mama do not include a main belt cover section and separate belt cover extension sections, as recited in claim 9 of the present application.

Additionally, as discussed above, Kojima fails to disclose any belt cover ply. Thus, it follows that Kojima fails to disclose a belt cover ply including a main belt cover section and separate belt cover extension sections, as recited in claim 9. For these reasons, applicant respectfully requests withdrawal of the rejection of claims 9, 10, and 18.

Claims 3, 5, 11, and 13 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Mama, Kojima, Mochida (JP 02-074403), and Yamamoto (JP 06-092108).

Claims 3 and 5 depend from claim 1, and claims 11 and 13 depend from claim 9. Thus, each of these claims incorporates all of the features of its respective independent claim, plus additional features. Accordingly, applicant traverses this rejection for at least the reasons recited above with respect to claims 1 and 9, and because Mochida and Yamamoto fail to remedy the deficiencies identified above with respect to Mama and Kojima. For these reasons, applicant respectfully requests withdrawal of the rejection of claims 3, 5, 11 and 13.

Claims 4 and 12 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Mama, Kojima, Mochida, Yamamoto, and Motomura (USPN 5,215,612). Claims 4 and 12 ultimately depend from independent claims 1 and 9 respectively. Thus, claims 4 and 12 incorporate all of the features of their respective independent claims, plus additional features. Accordingly, applicant traverses this rejection for the reasons discussed above with respect to claims 1 and 9, and because Motomura fails to remedy the deficiencies identified with respect to these rejections. Thus, applicant respectfully requests withdrawal of the rejection of claims 4 and 12 for the reasons discussed above with respect to claims 1 and 9.

Claims 9, 10, and 18 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Mama, in view of Yamaguchi (JP 06-344721) and Kojima. Applicant traverses this rejection because the cited prior art references, taken alone or in combination, fail to disclose or suggest a belt cover ply having a main belt cover section and belt cover extension sections separate from the main belt cover section and disposed radially inward and on each side of the main belt cover section, as recited in claim 9.

As discussed above, Mama shows, in Figs. 1-2, belt cover layers 6 arranged to cover the edges of underlying belt layers 5a and 5b. However, Figs. 1 and 2 do not show a main belt cover section, as recited in claim 9 of the present application. Accordingly, it follows that Mama cannot disclose that the belt cover layers are disposed radially inward of and on each side of a main belt cover section.

Also as discussed above, Kojima is cited only to disclose a coating rubber having a loss factor greater than 0 and less than 0.10. However, Kojima is silent regarding a belt cover layer.

Yamaguchi discloses a tire including belt layers 4 and a belt reinforcing layer 5. Yamaguchi also teaches that a belt addition reinforcement layer can be arranged on both-sides of a belt layer 4. However, Yamaguchi teaches that the belt addition reinforcement layer is disposed outside of a tire radial direction of the belt reinforcing layer.

In contrast, claim 9 of the present application recites that the belt cover extension sections are disposed radially inward of the main belt cover section. As shown in, for example, Figs. 5 and 6 of the present specification, belt cover extension sections 8'Y are disposed between the main belt cover section 8'X and the carcass ply, thus, the belt cover extension sections are positioned radially inward of the main belt cover section. Since, Mama, Kojima, and Yamaguchi, taken alone or in combination, do not disclose or suggest such a feature, applicant respectfully requests withdrawal of the rejection of claim 9 and its dependent claims 10 and 18.

Claims 11 and 13 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Mama, Yamaguchi, Kojima, Mochida, and Yamamoto. Claims 11 and 13 depend from claim 9. Thus, each of these claims incorporates all of the features of independent claim 9, plus additional features. Accordingly, applicant traverses this rejection for at least the reasons recited above with respect to claim 9, and because Mochida and Yamamoto fail to remedy the deficiencies identified above with respect to Mama, Yamaguchi, and Kojima. Specifically, Mochida and Yamamoto are cited only as disclosing a belt cushion rubber layer disposed between a belt layer and a carcass layer. However, Mochida and Yamamoto, taken alone or in combination, fail to disclose or suggest a belt cover ply that includes a main belt cover section and belt cover extension sections separate from the main belt cover section and disposed radially inward and on each side of the main belt cover section, as recited in claim 9. For these reasons, applicant respectfully requests withdrawal of the rejection of claims 11 and 13.

Claim 12 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over Mama, Kojima, Mochida, Yamamoto, and Motomura. Claim 12 ultimately depends from independent claim 9. Thus, claim 12 incorporates all of the features of independent claim 9, plus additional features. Accordingly, applicant traverses this rejection for the reasons discussed above with respect to claim 9, and because Motomura fails to remedy the deficiencies identified with respect to these rejections. Thus, applicant requests withdrawal of the rejection of claim 12 for the reasons discussed above with respect to claim 9.

Claims 1, 6, 8-10, 14, and 16-18 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Serra (WO 2002/26878), Yamaguchi, Mama, and Kojima. Applicant traverses for the reasons below.

Regarding claims 1, 6, 8, and 17, applicant traverses the rejection because the cited references, whether taken alone or in combination, fail to disclose or suggest the ratio h/SH of a tire radial-direction length h between edges of the extension portions and edges of the belt ply, and a section SH is less than or equal to 1.5/100, as recited in claim 1.

Serra discloses a tire including two belt strips and a reinforcing layer placed on the radially outermost belt strip. However, Serra fails to disclose a radial distance between the terminal edges of the reinforcing layer and the terminal edges of the belt strips. Additionally, Serra is silent regarding a section height of the tire. Thus, it follows that Serra cannot disclose the ratio h/SH as recited in claim 1 of the present application.

Yamaguchi discloses that a tire includes a two-layer belt layer 4, and a belt reinforcing layer 5 (See paragraph [0009]). As shown in Fig. 1 of Yamaguchi, the belt reinforcing layer 5 is disposed radially outward of the belt layer 4. However, as with Serra, Yamaguchi does not disclose a distance between edges of the belt reinforcing layer and edges of the belt layer, taken in a tire radial direction. Accordingly, since Yamaguchi fails to disclose this distance, it follows that Yamaguchi cannot disclose that a ratio between the distance and a section height of the tire falls within the range recited in claim 1.

As discussed above, Mama discloses that a tire includes one or more cover layers 6, where a portion of each of the cover layers is relatively close to belt layer 5a.

However, as shown in Figs. 1-3, terminal edges of the cover layers 6 have a relatively large vertical separation relative to terminal edges of the underlying belt layer 5a. Additionally, Mama is silent regarding a tire section height. Accordingly, it follows that Mama is necessarily silent regarding any relationship between the vertical separation between terminal edges of the cover layer 6 and terminal edges of the belt layer 5a and the section height of the tire.

Similarly, as discussed above, Kojima is cited only to disclose a coating rubber having a loss factor greater than 0 and less than 0.10. As acknowledged by the examiner, Kojima is silent regarding a belt cover layer. Accordingly, it necessarily follows that Kojima is also silent regarding ratio h/SH of a tire radial-direction length h between edges of the extension portions and edges of the belt ply, and a section SH , as recited in claim 1 of the present invention.

In contrast, the present application teaches that a ratio h/SH of a tire radial-direction length h , measured between edges of an extension portion of a belt cover ply and edges of a belt ply, and a tire section height SH should be less than or equal to 1.5/100. That is, as shown in, for example, Figs. 1, 2, and 4, the radial-direction separation between the edge A of the belt cover ply 8 and the edge B of the first belt ply 5A is small when compared to the tire section height. Maintaining this ratio advantageously moderates heat generated in a shoulder portion of the tire by the repeated deformation received when the tire is rolling.

Moreover, while the examiner asserts that the claimed ratio does not conclusively show unexpected results, applicant asserts that, as shown in Table 1 of the

present specification, maintaining the claimed ratio advantageously increases the uniformity and reduces the rolling resistance of Present Invention Tire 1, as compared with Comparison Tire 1. Because the cited references, taken alone or in combination, do not disclose or suggest the ratio h/SH as recited in claim 1, applicant respectfully requests withdrawal of the rejection of claims 1, 6, 8, and 17.

Further, as discussed above with regard to claim 17, the examiner has stated that the tires shown in Figs. 1-3 of Mama would likely satisfy the claimed ratio, since heavy-load tires and agricultural tires have larger section heights. However, claim 17 of the present application recites that the tire is a passenger-car tire, and not a heavy-load or agricultural tire. For this additional reason, applicant again asserts that the rejection of claim 17 should be withdrawn.

Regarding claims 9, 10, 14, 16, and 18, applicant traverses the rejection because Serra, Yamaguchi, Mama, and Kojima, taken alone or in combination, fail to disclose or suggest a belt cover ply including a main belt cover section and separate belt cover extension sections disposed radially inward of and on each side of the main belt cover section, as recited in claim 9.

Serra teaches that a pneumatic tire includes a pair of belt strips 106a, 106b and a reinforcing layer 106c arranged radially outward of the outermost belt strip. However, as shown in Fig. 1 of Serra, the reference teaches that the reinforcing layer 106c is a single structure formed by coating and welding together a plurality of reinforcing cords using an

elastomeric material. Thus, Serra fails to disclose a reinforcing layer including a main belt cover section and separate belt cover extension sections, as recited in claim 9.

As discussed above, Yamaguchi discloses a belt addition reinforcement layer arranged on both sides of a two-layer belt layer in addition to a belt reinforcement layer. However, Yamaguchi teaches that the belt addition reinforcement layer is disposed radially outward of the belt reinforcing layer.

Mama, as stated previously shows belt cover layers 6 disposed along the edges of belt layers 5a, 5b in Figs. 1 and 2. However, Mama fails to disclose a belt cover layer divided into a main belt cover section and separate belt cover extension sections disposed radially outward of the main belt cover section, as recited in the claims of the present application.

As noted above, Kojima is cited merely for disclosing the loss factor of a rubber compound, and does not disclose the use of a belt cover layer.

In contrast, the present application discloses a belt cover ply 8' that includes a main belt cover section 8'X and belt cover extension sections 8'Y, separate from the main belt cover section. As shown in Figs. 5 and 6, the belt cover extension sections are positioned on both sides of the main belt cover section, and between the main belt cover section and the carcass ply. That is, the belt cover extension sections, in addition to being disposed on each side of the main belt cover section, are also disposed radially inward of the main belt cover section. Since the cited prior art references, taken alone or in combination,

do not disclose or suggest these features, applicant respectfully requests withdrawal of the rejection of independent claim 9 and its dependent claims.

Claims 7 and 15 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Serra, Yamaguchi, Mama, Kojima, Kan (USPN 4,444,236), and Haneda (JP 07-257116). Claims 7 and 15 ultimately depend from claims 1 and 9, respectively. Accordingly, each of these claims incorporates all of the features of its respective independent claim, plus additional features. Therefore, applicant traverses the rejection of claims 7 and 15 for the reasons discussed above with respect to claims 1 and 9, and because Kan and Haneda fail to remedy the deficiencies identified above. Withdrawal is respectfully requested.

Finally, applicant has added new dependent claims 19 and 20, which depend from claim 9. Applicant asserts that these claims are allowable for at least the reasons discussed above with respect to claim 9.

For all of the above reasons, applicant submits that this application is in condition for allowance, which is respectfully requested. The examiner should call applicant's attorney if an interview would expedite prosecution.

If a Petition under 37 C.F.R. §1.136(a) for an extension of time for response is required to make the attached response timely, it is hereby petitioned under 37 C.F.R. §1.136(a) for an extension of time for response in the above-identified application for the period required to make the attached response timely. The Commissioner is hereby

authorized to charge fees which may be required to this application under 37 C.F.R. §§1.16-1.17, or credit any overpayment, to Deposit Account No. 07-2069.

Respectfully submitted,

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